

0515/1/2024
CHEMISTRY O/L

**SOUTH WEST REGIONAL MOCK EXAMINATION
GENERAL EDUCATION**

The Teachers' Resource Unit (TRU) in collaboration with the Regional Pedagogic Inspectorate of Pedagogy for Science Education and South West Chemistry Teachers' Association (SOWECTA)	Subject Code 0515	Paper Number 1
CANDIDATE NAME	Subject Title CHEMISTRY	
CANDIDATE NUMBER		
CENTRE NUMBER		
ORDINARY LEVEL	DATE Wednesday, Morning 20/03/2024	

Time Allowed: One hour thirty minutes

INSTRUCTIONS TO CANDIDATES:

- USE A SOFT HB PENCIL THROUGHOUT THIS EXAMINATION.
- DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
Before the Examination begins:
- Check that this question booklet is headed "Ordinary Level – 0515 Chemistry, Paper 1".
- Insert the information required in the spaces provided above.
- Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.
- Insert the information required in the spaces provided on the answer sheet using your HB pencil:
Candidate Name, Centre Number, Candidate Number, Subject Code Number and Paper Number
How to answer questions in this examination:
- Answer ALL the 50 questions in this examination. All questions carry equal marks.
- Non-programmable calculators are allowed.
- For each question there are four suggested answers, A, B, C, and D. Decide which answer is correct. Find the number of the question on the Answer sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen. For example, if C is your correct answer, mark C as shown below:
$$\left[A \right] \left[B \right] \left[\underline{C} \right] \left[D \right]$$
- Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
- Avoid spending much time on any question. If you find a question difficult, move to the next question. You can come back to this question later.
- Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
- Mobile phones are **NOT ALLOWED** in the examination room.
- You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination

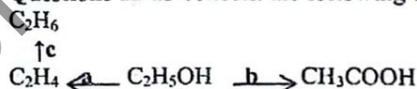
- What is the change of state from gas to solid called?
 - Sublimation
 - Melting
 - Condensation
 - Deposition
- Metals are malleable because
 - They have mobile electrons
 - They have strong metallic bond
 - Their atoms are in layers
 - Layers of metal atoms can slide over each other
- What is the composition of oxygen in air?
 - 0.93%
 - 0.03%
 - 78%
 - 21%
- A pure substance that cannot be broken down into simpler substances is
 - A molecule
 - An element
 - A mixture
 - A compound
- Identify a crystalline allotrope of sulphur
 - Colloidal sulphur
 - Plastic sulphur
 - Rhombic sulphur
 - Flowers of sulphur
- Which of the following processes undergoes a physical change?
 - Heating sugar
 - Burning paper
 - Burning candle wax
 - Burning wood
- Sodium chloride allows current to pass through it, because it is.....
 - A conductor
 - A non-conductor
 - An electrolyte
 - A non-electrolyte

Questions 8-11 concern the statement below.

The element X with isotopes ${}_{16}^{31}\text{X}$ and ${}_{16}^{33}\text{X}$ has relative abundances of 64% and 36% respectively.

- Deduce the neutron number of the two isotopes.
 - 16 and 16
 - 15 and 17
 - 16 and 15
 - 16 and 17
- What is the relative atomic mass of X?
 - 15.00
 - 16.72
 - 31.72
 - 32.28
- What type of bonding will occur when X forms an oxide with oxygen?
 - Covalent
 - Ionic
 - Metallic
 - Hydrogen
- Why is calcium chloride used as a drying agent?
 - It is anhydrous
 - It is efflorescent
 - It is deliquescent
 - It is hygroscopic

Questions 12-13 concern the following conversions



- State the reaction condition represented by b.
 - Conc. H_2SO_4 in excess
 - Dil. H_2SO_4 in excess
 - Conc. HCl in excess
 - Conc. $\text{H}_2\text{SO}_4 / \text{K}_2\text{Cr}_2\text{O}_7$
- Identify the reagent c
 - Cl_2
 - H_2
 - Pt
 - Ni
- From the thermochemical equation

$$\text{C}_2\text{H}_5\text{OH}(\text{g}) + \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) \quad \Delta\text{H} = -1339\text{KJ}$$
 What does the negative sign of ΔH signify?
 - Heat is evolved
 - Reaction is endothermic
 - Heat flows from the surrounding to system
 - The reaction is not reversible

15. Which of the following natural source of water is best for drinking?

- A. Well
- B. Tap
- C. Spring
- D. Lake

16. Which of the following equipment is used to measure a fix volume of liquid?

- A. Burette
- B. Breaker
- C. Measuring cylinder
- D. Pipette

17. Which of the following reactants is the best starting material for the preparation of sodium chloride?

- A. $\text{Na(s)} + \text{HCl(aq)}$
- B. $\text{NaO(s)} + \text{HCl(aq)}$
- C. $\text{Na(s)} + \text{Cl}_2(\text{g})$
- D. $\text{NaOH(aq)} + \text{HCl(aq)}$

18. What volume of 0.4M sulphuric acid is needed to neutralise 25 cm³ of 0.5M sodium hydroxide?

- A. 10 cm³
- B. 20 cm³
- C. 15.6 cm³
- D. 31.25cm³

19. A salt X is dissolved and reacted with acidified silver nitrate and a pale-yellow precipitate is observed.

Identify X

- A. A bromide
- B. A chloride
- C. An iodide
- D. A fluoride

20. A salt when heated liberates a gas that turns red litmus blue. Identify salt and gas produced:

- A. NH_4NO_3 and N_2
- B. $(\text{NH}_4)_2\text{CO}_3$ and CO_2
- C. NH_4Cl and Cl_2
- D. NH_4Cl and NH_3

21. Identify the molecule with a linear shape

- A. H_2O
- B. NH_3
- C. CO_2
- D. SO_2

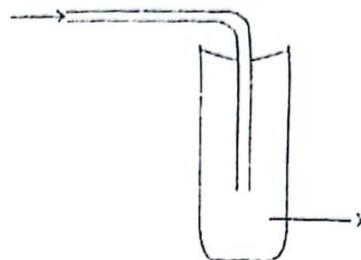
22. Identify an element stored under water in the laboratory

- A. Potassium
- B. Sodium
- C. Phosphorus
- D. Lithium

23. Identify the pair of elements that will form nitrides on heating with nitrogen.

- A. Li and Na
- B. Mg and Na
- C. Mg and Li
- D. Na and Ca

24. Considering the diagram for the collection of gas X



Identify the gas X

- A. NH_3
- B. Cl_2
- C. N_2
- D. H_2

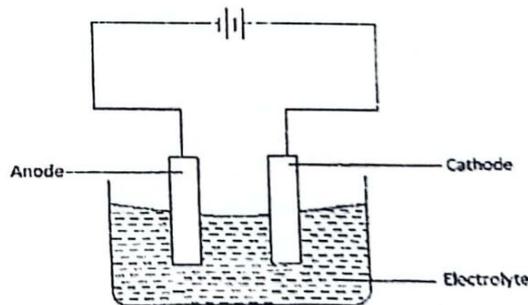
25. How many potassium ions are present in 25 cm³ of 2M KOH? (Avogadro number = 6.02×10^{23})

- A. 6.02×10^{23}
- B. 3.01×10^{22}
- C. 3.01×10^{25}
- D. 3.01×10^{23}

26. A gas of volume 420 cm³ has a pressure of 790 mmHg. What will be its new volume if the pressure reduces to 740 mmHg?

- A. 370cm³
- B. 393 cm³
- C. 448 cm³
- D. 1391 cm³

Questions 27-28 concern the diagram below.



In the purification of impure copper, a current of 2.5A is passed through the electrolyte for 2hrs 30minutes.

27. Identify the anode and electrolyte.
[RAM: Cu = 64, 1F = 96,000 C]
- | | Anode | Electrolyte |
|----|---------------|-----------------|
| A. | Pure copper | Copper sulphate |
| B. | Impure copper | Copper sulphate |
| C. | Graphite | Copper sulphate |
| D. | Impure copper | Sodium sulphate |
28. Calculate the mass of copper deposited at the cathode?
(MM of Cu = 64g/mol)
- A. 0.125g
B. 0.25g
C. 15g
D. 7.5g
29. 200 cm³ of 1M KOH completely neutralises 200cm³ of 1M HCl with a temp rise of 7°C. Calculate the heat of neutralisation. (c = 4.2 J/g°C)
- A. 58.8KJmol
B. 29.41KJmol
C. -58.8KJmol
D. -29.4KJmol
32. Which of the element(s) will readily displace hydrogen from acid?
1. Sodium
2. Zinc
3. Iron
4. Copper
33. On analysis, a hydrocarbon was found to contain 9.6 g of carbon and 1.6 g of Hydrogen and its molecular mass was found to be 78. What is its molecular formula?
- A. CH₂
B. CH₄
C. C₆H₁₂
D. C₆H₆
34. Reduction can be defined as
- A. Gain in oxygen
B. Loss in hydrogen
C. Loss in electrons
D. Gain in hydrogen
35. What is the negatively charged electrode of an electrolytic cell called?
- A. Electrode
B. Anode
C. Cathode
D. Electrolyte
36. Which of the following compound belongs to the homologous series C_nH_{2n}?
- A. Methane
B. Ethene
C. Ethyne
D. Ethanol

QUESTIONS 30-33

INSTRUCTIONS: For each of the questions, one or more response(s) given is (are) correct. Decide which response(s) is (are) correct. Then choose.

- A. If 1,2 and 3 are correct
B. If 1 and 3 are correct
C. If 2 and 4 are correct
D. If only 4 is correct.

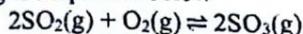
Instructions Summarized			
A	B	C	D
1,2,3only	1,3 only	2,4 only	4 only

30. Which is (are) the step(s) involved in the separation and purification of a mixture of sodium chloride and rice grains?
1. Magnetisation followed by dissolving
2. Evaporation to dryness
3. Winnowing followed dissolving
4. Dissolving followed by filtration
31. Which is (are) the crystalline forms of carbon?
1. Diamond
2. Coal
3. Graphite
4. Charcoal

- Concerns question 37-38**
Elements X and Y have atomic numbers 13 and 17 respectively (where X and Y are not their usual symbols)
37. Identify the group to which X belongs.
- A. 1
B. 2
C. 3
D. 4
38. Deduce the formula of the compound X and Y will form.
- A. XY
B. XY₂
C. XY₃
D. X₂Y₄

Question 39-40

Using the equation below



39. Which of the following factors does not affect the equilibrium position?
- Pressure of gas
 - Temperature
 - Catalyst
 - Concentration
40. What will be the effect on the yield of SO_3 When pressure is increased?
- Yield will reduce
 - Yield will remain the same
 - Yield will increase
 - Reaction will stop

QUESTIONS 41-43

INSTRUCTIONS: Each of the following questions consists of a statement in the left-hand column followed by a second statement in the right-hand column. Decide whether each of the statements is **True** or **False**. Then on your answer sheet, choose.

- If both statements are **True** and the second statement is a correct explanation of the first.
- If both statements are **True** but the second statement is not a correct explanation of the first.
- If the first statements is **True** but the second is **False**
- If the first statements is **False** but the second statement is **True**.

	First Statement	Second statement
A	True	True and the second statement is the correct explanation of the first
B	True	True and the second statement is Not the correct explanation of the first
C	True	False
D	False	True

	First statement	Second statement
41	Ethanol evolves white fumes with PCl_5	Ethanol undergoes oxidation to ethanoic acid.
42	Ionic compounds are good electrolytes in solution	Ionic compounds in solution contain free ions.
43	Carbon dioxide is used in fire extinguishers	Carbon dioxide supports combustion

44. Which of the organic compounds is used extensively to improve food flavour?
- Alcohols
 - Esters
 - Alkanes
 - Carboxylic acids
45. What are fertilizers used for?
- Increase soil moisture
 - Improve crop production
 - Decrease soil fertility
 - Kill soil bacteria
46. Which of the following must be present for rusting to occur?
- Carbon dioxide and water
 - Oil and water
 - Air and water
 - Oxygen and oil
47. Identify a gas which causes global warming.
- Sulphur dioxide
 - Carbon dioxide
 - Carbon monoxide
 - Ammonia
48. Which is the catalyst used during the Haber process?
- Finely divided iron
 - Platinum rhodium
 - Nickel
 - Vanadium pentoxide
49. A soil with a pH of 3 is treated with a chemical substance so as to neutralize it
What is the nature of the soil?
- Neutral
 - Basic
 - Amphoteric
 - Acidic
50. Identify the salt formed when dilute hydrochloric acid is added to potassium hydroxide
- KCl
 - KOH
 - K_2SO_4
 - KNO_3

END.

GO BACK AND CHECK YOUR WORK